

April 27, 2016

Via Fed Ex

Attn: Robert Stein, Chairman
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Petition of Bloom Energy Corporation, as agent for Ikea, for a Declaratory Ruling for the Location and Construction of a 250 kW Fuel Cell Customer-Side Distributed Resource at 450 Sargent Drive – New Haven, CT 06511.

Dear Chairman Stein:

We are submitting an original and fifteen (15) copies of the above-captioned Petition, together with the filing fee of \$625.

In the Petition, Bloom Energy Corporation ("Bloom"), as agent for Ikea, requests the Connecticut Siting Council approve the location and construction of a 250 kilowatt fuel cell and associated equipment (the "Facility"). The Facility will be located on the site of the Ikea Store at 450 Sargent Drive, New Haven, CT (the "Site"). Electricity generated by the Facility will be consumed primarily at the Site, and any excess electricity will be exported to the electric grid. The Facility will be fueled by natural gas.

Should you have any questions, concerns, or require additional information, please do not hesitate to contact me at 908-462-9919.

Sincerely,

Core States Group



Matthew S. DeWitt, PE
mdewitt@core-eng.com
(908) 462-9919

**STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL**

PETITION OF BLOOM ENERGY : PETITION NO. ____
CORPORATION AS AGENT FOR IKEA FOR A :
DECLARATORY RULING FOR THE :
LOCATION AND CONSTRUCTION OF A 250- :
KILOWATT FUEL CELL CUSTOMER-SIDE :
DISTRIBUTED RESOURCE AT 450 SARGENT : April 20, 2016
DRIVE, NEW HAVEN, CONNECTICUT

PETITION OF BLOOM ENERGY CORPORATION AS AGENT FOR IKEA FOR A
DECLARATORY RULING

Pursuant to Conn. Gen. Stat. §§ 4-176 and 16-50k(a) and Conn. Agencies Regs. § 16-50j-38 et seq., Bloom Energy Corporation (“Bloom”), as agent for IKEA (“IKEA”), requests that the Connecticut Siting Council (“Council”) approve by declaratory ruling the location and construction of a customer-side distributed resources project comprised of a 250-kilowatt (“kW”) (net) Bloom solid oxide fuel cell Energy Server facility and associated equipment (the “Facility”), located on the site of the IKEA at 450 Sargent Drive, New Haven, Connecticut (the “Site”). See Exhibit 1. The Facility will be installed by Bloom and owned and operated by 2015 Project Company, LLC, a wholly owned subsidiary of Bloom under agreement with IKEA.

Conn. Gen. Stat. § 16-50k(a) provides that:

Notwithstanding the provisions of this chapter or title 16a, the council shall, in the exercise of its jurisdiction over the siting of generating facilities, approve by declaratory ruling . . . (B) the construction or location of any fuel cell, unless the council finds a substantial adverse environmental effect or of any customer-side distributed resources project or facility . . . with a capacity of not more than sixty-five megawatts, as long as such project meets air and water quality standards of the Department of Energy and Environmental Protection.”

As discussed fully in this petition, in addition to being a fuel cell facility, the Facility will be a customer-side distributed resources facility under 65 megawatts (“MW”) that complies with the air and water quality standards of the Connecticut Department of Energy and Environmental Protection (“DEEP”). Additionally, the Facility will not have a substantial adverse environmental effect in the State of Connecticut.

I. COMMUNICATIONS

Correspondence and other communication regarding this petition should be directed to the following parties:

Adam Mueller, P.E.
Core States Group
58 Mount Bethel Road
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Warren, NJ 07059
Telephone: (908) 462-9914
Fax: (908) 548-0875
Email: amueller@core-eng.com

Erik Amrine, PMP
Bloom Energy Corporation
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Sunnyvale, CA 94089
Telephone: (267) 234-1673
Fax: (408) 543-1501
Email: Erik.Amrine@bloomenergy.com

II. DISCUSSION

A. Background

The Facility will be a 250kW customer-side distributed resources facility consisting of one state-of-the-art Bloom Energy Servers and associated equipment. The Facility will be interconnected to the existing switchgear located inside the electrical room of the IKEA store (the “Building”). *See* Exhibit 2. Electricity generated by the Facility will be consumed primarily at the Site, and any excess electricity will be exported to the grid.

The Facility will be a “customer-side distributed resources” project because it will be “a unit with a rating of not more than sixty-five megawatts [and is located] on the premises of an

industrial end user within the transmission and distribution system including, but not limited to, fuel cells” Conn. Gen. Stat. § 16-1(a)(40)(A). Further, in its Final Decision in Docket No. 12-02-09, dated September 12, 2012, the Connecticut Public Utilities Regulatory Authority (“PURA”) determined that Bloom’s Energy Server qualifies as a Class I renewable energy source fuel cell as defined in Conn. Gen. Stat. §16 1(a)(26)(A). See Exhibit 3.

B. Description of the Site and the Facility

1. The Site

The Facility will be installed within the IKEA property located at 450 Sargent Drive, New Haven, Connecticut. Specifically, the Facility will be constructed on the 19.15-acre property (“the Site”) that surrounds the IKEA building. The Site is zoned as a “Planned Development District 100” (“PDD 100”) under the zoning regulations of the Town of New Haven (the “Town”).

The majority of the surrounding areas are zoned under Business Districts as General Business (“BA”) Wholesale and Distribution (“BE”). The area to the east of the property is zoned as Planned Development District 53 (“PDD 53”) which encompasses a portion of Interstate 95. No residential structures are located near the Facility.

The Facility will be located on an elevated platform within an existing concrete sidewalk at the rear of the building adjacent to the existing transformers and generator. The portion of the Site that will be used for the Facility is shown in Exhibit 2.

Prior to filing this petition, representative from Core States Group, Bloom’s engineering consultant, briefly discussed the proposed Facility with the City’s Planning and Zoning

Department Representative, Anne Hartjen. An opportunity to comment on the proposed Site Plan has been provided to the town to incorporate any design comments they may have. See Exhibit 4.

2. The Facility

The Facility will consist of one Bloom solid oxide fuel cell Energy Server and associated equipment. The dimensions of the Facility is approximately 30'-4" long, 4'-5" wide and 6'-10" high. The Energy Server module is enclosed, factory-assembled and tested prior to installation on the Site. *See Exhibit 5.*

The Facility will be capable of producing 250 kW of continuous, reliable electric power. The Facility will interconnect to the Site's distribution system and operate in parallel with the grid to provide the Site's electrical requirements. Any electricity generated in excess of the Site's requirement will be exported to the grid under United Illuminating's ("UI") net metering tariff. This site will not have an uninterruptible power module (UPM) and thus will not have any means to output power in a grid independent capacity at any time. The interconnection to UI will be provided from the existing switchgear located inside the electrical room. At the time this petition was filed, the United Illuminating interconnection application for the Facility is being prepared.

The fuel cell, and more specifically the inverters within, are UL1741/IEEE1547 compliant and thus will not operate without a stable utility voltage available. In the event of an outage the fuel cells will not automatically shut down, they will enter a state of stand-by awaiting the return of a stable utility voltage. When in a state of complete shut down the Bloom fuel cells require a combination of remote and on-site coordination to start up the systems. This work is performed by Bloom employed, trained and certified personnel only, IKEA does not control the operation of the system directly.

The Energy Server will be fueled by natural gas supplied by Southern Connecticut Gas (“SCG”). Gas service will be delivered to the Energy Server via a new SCG gas meter assembly located adjacent to the existing building meter. A regulator set assembly is being provided adjacent to the new meter. The new service line will branch off of the existing SCG line within the concrete area near the southwest face of the Building.

The natural gas served through the SCG line includes naturally occurring elements, and sulfur added as a safety measure, which Bloom filters out to prevent damage to the systems. Desulfurization of the gas takes place entirely within self-contained Desulf Canisters. Because they are built to hold natural gas, their structural integrity is essential. That integrity is assured by a pressure sensor within the servers to detect any leak. Were there a leak, the server (including the desulfurization operation) will shut down automatically. When the filter materials no longer provide fully efficient sulfur removal, the Desulf Canisters are replaced with another unit containing a fresh filter. In addition to sulfur compounds, the filter may contain trace amounts of hydrocarbons or other organic compounds which are naturally present in natural gas. Bloom utilizes an EPA exemption that provides for the regulation of the Desulf Canisters at the point of removal of any waste. Despite having the exemption, Bloom has taken extra precautions. The Desulf Canisters are certified by the U.S. Department of Transportation so that they can be periodically removed and sent to an offsite location for cleaning by qualified, trained personnel with proper licensing and in accordance with legal and regulatory requirements. We firmly believe the process poses no risk to health or to the environment.

The Bloom Energy Server will have extensive hardware, software and operator safety control systems, designed into the system in accordance with ANSI/CSA America FC 1-2004,

the American National Standards Institute and Canadian Standards Association standard for Stationary Fuel Cell Power Systems. The Facility is remotely monitored by Bloom Energy 24 hours a day, seven days a week. If software or hardware safety circuits detect an unsafe condition, variation in temperature or gas pressure outside of operational parameters, fuel supply is automatically stopped and the system is shut down. Two manual fuel shut-off valves are provided at each installation site, and two normally closed, safety shut-off rated isolation valves are installed within the system. The Facility will be installed in compliance with all applicable building, plumbing, electrical, fire and other codes.

The risk of fire related to the operation of the Energy Server is very low. In the Bloom fuel cell, natural gas is not burned; it is used in a chemical reaction to generate electricity. The natural gas is digested almost immediately upon entering the unit and is no longer combustible. As stated above, any variation in heat outside of the operational parameters will trigger an automatic shutdown of the energy server.

C. The Facility Complies with DEEP's Air and Water Quality Standards and Will Not Have a Substantial Adverse Environmental Effect

The construction and operation of the Facility will comply with DEEP's air and water quality standards and will not have a substantial adverse environmental effect.

Construction-related impacts will be minimal. The Facility will be located within an existing asphalt area behind the Building. The facility will not extend beyond the limits of the existing asphalt area. All utilities will be installed within the asphalt area and along the rear face of the Building. All utility trenches will be restored in-kind.

Conn. Agencies Regs. § 22a-174-42, which governs air emissions from new distributed generators, exempts fuel cells from air permitting requirements. Accordingly, no permits, registrations, or applications are required based on the actual emissions from the Facility. See Conn. Agencies Regs. §§ 22a-174-42(b) and (e). Notwithstanding this exemption, as shown below in Table 1, the Facility meets the Connecticut emissions standards for a new distributed generator.

Table 1: Connecticut Emissions Standards for a New Distributed Generator

Compound	Connecticut Emission Standard (lbs/MW-hr)¹	Bloom Energy Server (lbs/MW-hr)
Oxides of Nitrogen (NO _x)	0.15	<0.01
Carbon Monoxide (CO)	1	<0.10
Carbon Dioxide (CO ₂)	1,650	735-832

The facility will also meet state criteria thresholds and projected emissions for all greenhouse gases defined in Regulations of Connecticut State Agencies Section 22a-174-1(49) as shown in Table 2. By virtue of the non-combustion process the Bloom fuel cells virtually eliminate NO_x, SO_x, CO, VOCs and particulate matter emissions from the energy production process. Similarly there are NO CH₄, SF₆, HFC or PFC emissions.

Table 2: Connecticut Thresholds for Greenhouse Gases

Emission Type	Bloom Output	LERC allowance
Nitrous Oxides (NO _x)	<0.01 lbs/MWh	0.07 lbs/MWh
Carbon Monoxide (CO)	<0.10 lbs/MWh	0.10 lbs/MWh
Sulfur Oxides (SO _x)	Negligible	Not Listed
Volatile Organic Compounds (VOCs)	<0.02 lbs/MWh	0.02 lbs/MWh
Carbon Dioxide (CO ₂) See note 1	735-832 lbs/MWh	Not Listed

¹ Conn. Agencies Regs. § 22a-174-42, Table 42-2.

Note 1: Carbon Dioxide is measured at Bloom's stated lifetime efficiency level of 53-60%

During construction, appropriate erosion and sedimentation (E&S) controls will be installed and areas of disturbance will be promptly stabilized in order to minimize the potential for soil erosion and the flow of sediments off site.. Temporary E&S control measures will be maintained and inspected throughout construction to ensure their integrity and effectiveness. The temporary E&S control measures will remain in place until the work is complete and all disturbed areas have been stabilized. Due to the limited disturbance required for the Facility's installation, no construction-related storm water permits will be required. Further, no additional impervious area will be added to the Site and will not affect drainage patterns or stormwater discharge. With respect to water discharges, the Energy Servers are designed to operate without water discharge under normal operating conditions.

A review of the publically available Natural Diversity Database (NDDB) has shown no known occurrences of state-listed species within the proposed Facility location. Furthermore, the proposed Facility will be located in an existing concrete area on a lot that was previously developed and disturbed during construction of the Building. Therefore, the construction and operation of the Facility will not have any adverse effects on wetlands, state-listed species, cultural (archaeological and historical) resources or surrounding areas.[JA1]

The acoustical impact of the Facility will be minimal, and the Facility will meet the applicable requirements for off-site noise receptors [JA2]. The proposed site is considered is zoned as a Wholesale & Distribution Zone "BE". The proposed Facility does not have any

impulse, prominent discrete tones, or infrasonic and ultrasonic noise components, and therefore the property line threshold noise levels are set at 62 dBA. The distance to the site boundary from the system would be approximately 50 feet. At that distance the expected noise level would be approximately 58dBA, below the threshold for the area. As discussed above, the proposed Facility will not be located near any residential properties.

III. NOTICE

Bloom has provided notice of this petition to all persons and appropriate municipal officials and governmental agencies to whom notice is required to be given pursuant to Conn. Agencies Regs. § 16-50j-40(a).² A copy of the notice letter and a service list is attached as Exhibit 6.

IV. BASIS FOR GRANTING OF THE PETITION

Under Conn. Gen. Stat. § 16-50k(a), the Council is required to approve by declaratory ruling the construction or location of a customer-side distributed resources project or facility with a capacity of not more than 65 MW, as long as the facility meets DEEP air and water quality standards. The proposed Facility meets each of these criteria. The Facility is a “customer-side distributed resources” project, as defined in Conn. Gen. Stat. § 16-1(a)(40)(A), because the Facility is “a unit with a rating of not more than sixty-five megawatts [and is located] on the premises of a retail end user within the transmission and distribution system

² Conn. Agencies Regs. § 16-50j-40(a) requires that “[p]rior to submitting a petition for a declaratory ruling to the Council, the petitioner shall, where applicable, provide notice to each person other than the petitioner appearing of record as an owner of property which abuts the proposed primary or alternative sites of the proposed facility, each person appearing of record as an owner of the property or properties on which the primary or alternative proposed facility is to be located, and the appropriate municipal officials and government agencies [listed in Section 16-50l of the Connecticut General Statutes].”

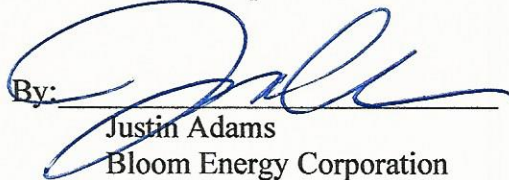
including, but not limited to, fuel cells” and, as demonstrated herein, will meet DEEP air and water quality standards. In addition, as demonstrated above, the construction and operation of the Facility will not have a substantial adverse environmental effect in the State of Connecticut.

V. CONCLUSION

For the reasons stated above, Bloom, as agent for IKEA, respectfully requests that the Council approve the location and construction of the Facility by declaratory ruling.

Respectfully submitted,

Bloom Energy Corporation

By: 

Justin Adams

Bloom Energy Corporation

1299 Orleans Drive

Sunnyvale, CA 94089

Telephone: (408) 338-7452

Email: justin.adams@bloomenergy.com

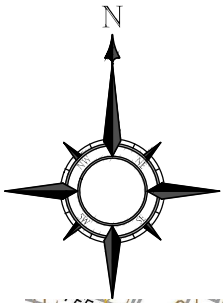
EXHIBITS

- Exhibit 1: Site Location Map
- Exhibit 2: Site Plan
- Exhibit 3: Final Decision, PURA Docket No. 12-02-09, *Petition of Bloom Energy Corporation for a Declaratory Ruling that Its Solid Oxide Fuel Cell Energy Server Will Qualify as a Class I Renewable Energy Source* (Sept. 12, 2012)
- Exhibit 4: Correspondence with the Town
- Exhibit 5: Bloom Energy Server Product Datasheet and General Installation Overview
- Exhibit 6: Notice Pursuant to Conn. Agencies Regs. § 16-50j-40(a)
- Exhibit 7: Abutters Map

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- Exhibit 7: Abutters Map

Exhibit 1



Job#: BEC-20260

Scale: 1" ≈ 2,000'

Date: 04/20/2016

Drawn By: MDS

CORE STATES



58 Mount Bethel Boulevard, Suite 301,
Warren, NJ 07059
Tel: (908) 462-9700 Fax: (908) 462-9909
amueller@core-eng.com

GROUP

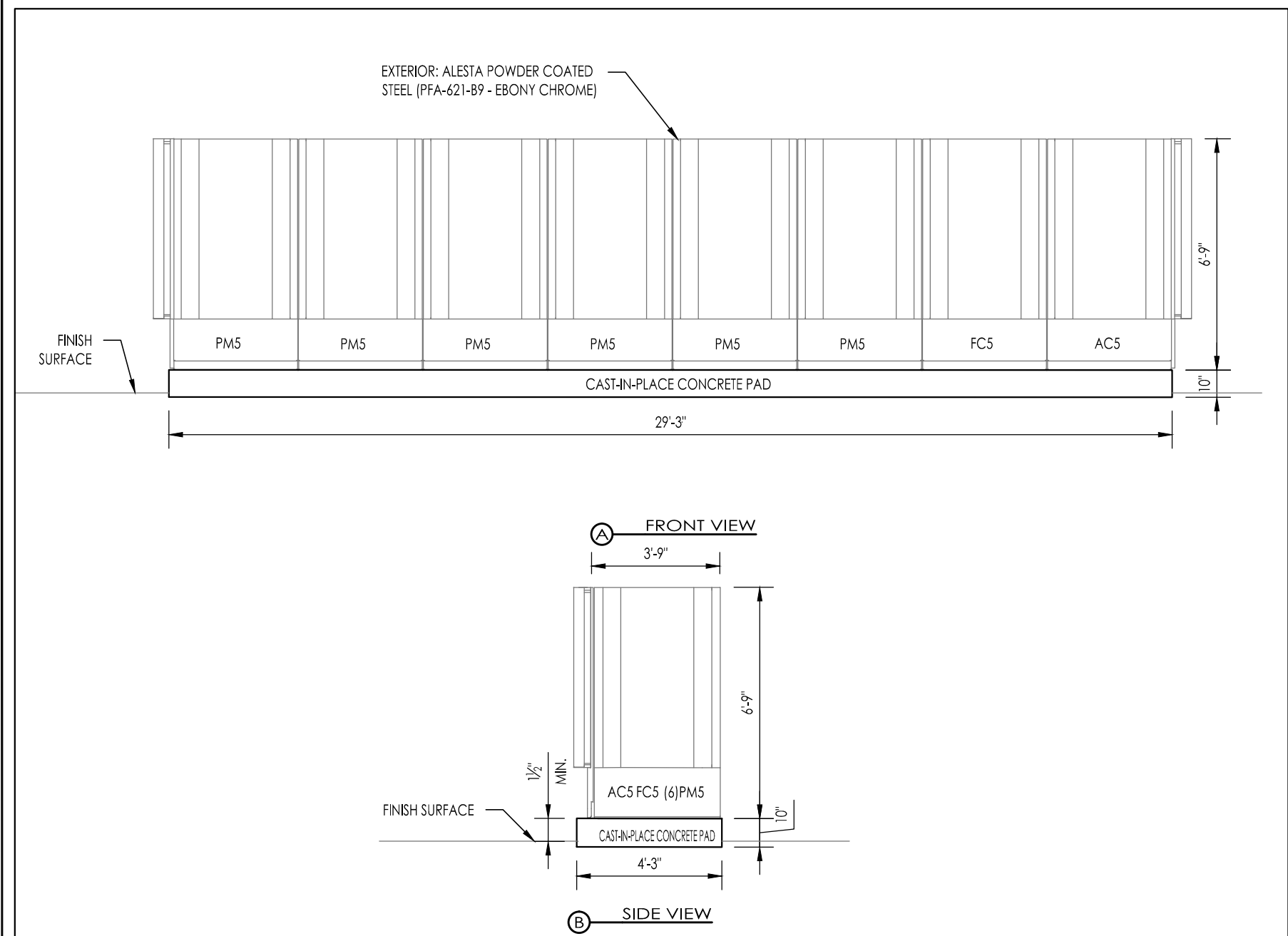
Bloomenergy™

1252 Orleans Drive, Sunnyvale CA, 94089
Tel: 408 543 1500 Fax: 408 543 1501

450 SARGENT DRIVE
NEW HAVEN, CT 06511

EXHIBIT 1 - SITE LOCATION MAP
USGS MAP (NEW HAVEN)

Exhibit 2



TYP ELEV OF ONE ES-5 BLOOMENERGY ES UNIT

SCALE
N.T.S.

2

SYSTEM			
Output Power	262.5 kW	Total System Weight (Less Pad)	27,192 lbs
Voltage	480 VAC	Weight - YPM x 6	3,577 lbs
Maximum Output Current	316 Amps	Weight - YAC x 1	3,161 lbs
Frequency	60 Hz	Weight - YFP x 1	2,569 lbs
		Weight - Pad	38,235 lbs
FUEL REQUIREMENTS			
Connection	2" FNPT	Pressure	15 (+3/-1) PSIG
Fuel Type	Natural Gas	Max Consumption Rate (60F, 1atm)	2.3MMBtu/hr
WATER REQUIREMENTS			
Connection	1/2" MNPT	Flow - Startup	< 0.8 gal/min
Quality	Municipal Grade	Flow - Continuous	0 gal/min
Minimum Pressure	35 PSI	Water Discharge	0 gal/min

BLOOMENERGY
ES-5 SPECIFICATION

BLOOMENERGY ES-5 SPECIFICATIONS

SCALE
N.T.S.

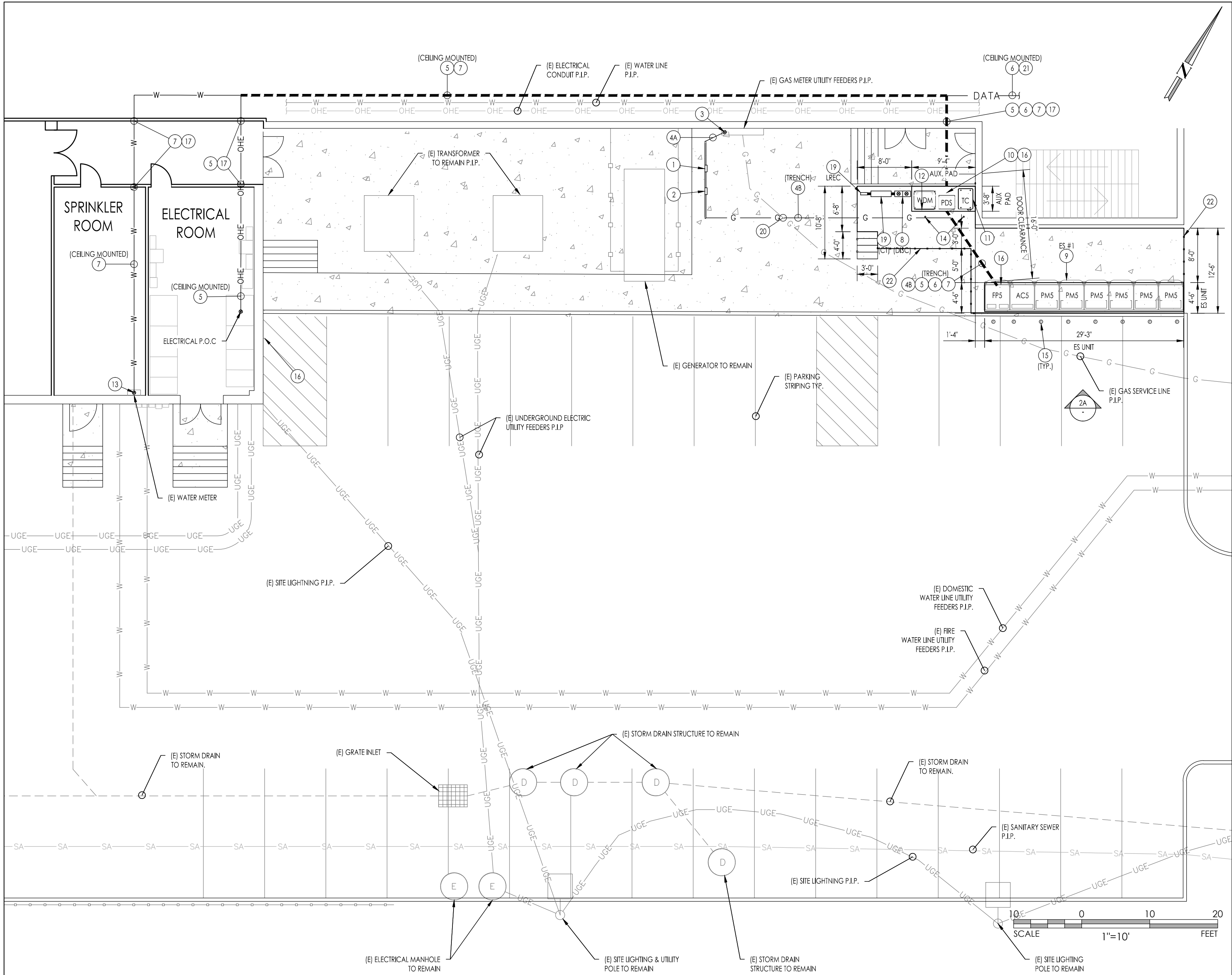
3



OVERALL AREA PLAN

SCALE
1"=200'

4



SITE PLAN

SCALE
1"=10'-0"

1

RESPONSIBILITY NOTES

- THE FOLLOWING EQUIPMENT SHOWN ON THESE PLANS WILL BE PROVIDED AND DELIVERED BY BLOOM ENERGY. APPLICABLE TRADES TO MOUNT AND MAKE FINAL CONNECTIONS:
 - POWER DISTRIBUTION SECTION (PDS)
 - TELEMETRY CABINET (TC)
 - WATER DEIONIZATION MODULE (WDM)
 - PRIVATE GAS REGULATOR SET ASSEMBLY (RSA)
 - DISCONNECT SWITCH
 - SIGNAGE (SEE SAFETY SIGNAGE)
 - SITE KIT (SEE SITE KIT NOTES)
- THE FOLLOWING EQUIPMENT SHOWN ON THESE PLANS WILL BE PROVIDED, DELIVERED AND MOUNTED BY BLOOM ENERGY, APPLICABLE TRADES TO MAKE FINAL CONNECTIONS:
 - CLEAN ENERGY SERVER
- CONTRACTOR TO REFER TO ELECTRICAL PLANS FOR ASSOCIATED WORK.

SITE KIT NOTES

- BLOOMENERGY TO PROVIDE AND DELIVER THE SITE KIT.
- ELECTRICAL AND PLUMBING CONTRACTOR TO INSTALL SITE KITS, CONSISTING OF PAD, PLUMBING AND BUS BARS, ON THE PRECAST CONCRETE PAD PER MANUFACTURE SPECIFICATIONS.
- PWM DEFLECTORS ARE REQUIRED AT THIS SITE.

UTILITIES

GAS: SOUTHERN CONNECTICUT GAS (SCG)
ELECTRIC: UNITED ILLUMINATING COMPANY (UII)

CONDUIT & PIPE LENGTHS

TYPE	TOTAL DISTANCE FROM TIE-IN TO FURTHERMOST ES UNIT (LINEAR)
GAS PIPE	±350'
ELECTRICAL CABLE	±150'
DATA CONDUIT	±900'
WATER PIPE	±180'

LEGEND OF UTILITY LINES

DATA	DATA LINE	SA	SA	SANITARY LINE
FENCE	FENCE LINE	ST	ST	STORM LINE
FIBER	FIBER OPTICS & PHONE	TV	TV	TELEVISION LINE
G	GAS LINE	UG	UG	UNDERGROUND ELECT.
JOINT	JOINT UTILITY RUN	OH	OH	OVERHEAD ELECTRICAL

KEYNOTES

- (N) UTILITY GAS METER SET ASSEMBLY (MSA) FOR CLEAN ENERGY SERVER. COORDINATE LOCATION & INSTALLATION REQUIREMENTS WITH UTILITY COMPANY PRIOR TO INSTALLATION. MAINTAIN MINIMUM 5'-0" CLEARANCE FROM ALL EXISTING SOURCES. CONTRACTOR TO INSTALL PER MSA & INTERCONNECTION PER INTERCONNECTION DIAGRAMS.
- (N) PRIVATE GAS REGULATOR SET ASSEMBLY (RSA) FOR CLEAN ENERGY SERVER WITH SHUT-OFF VALVE. MAINTAIN MINIMUM 5'-0" CLEARANCE FROM ALL EXISTING SOURCES & WET UTILITIES. PROVIDE REEF, & INTERCONNECTION PER INTERCONNECTION DIAGRAMS.
- (N) GAS SERVICE TAP BY UTILITY COMPANY. EXACT LOCATION TO BE COORDINATED WITH UTILITY. SEE(S) & TRENCHING REQUIREMENTS PER UTILITY COMPANY.
- (N) GAS PIPE FROM (N) GAS TAP TO TERMINATE AT (N) UTILITY MSA INSTALLED BY UTILITY COMPANY. SEE(S) & TRENCHING REQUIREMENTS PER UTILITY COMPANY.
- (N) GAS PIPE FROM (N) UTILITY GAS MSA TO (N) PRIVATE GAS RSA INSTALLED BY CONTRACTOR. SEE PER INTERCONNECTION DIAGRAM.
- (N) ELECTRICAL CONDUIT & WIRES FROM (N) ES UNIT TO (N) DISCONNECT TO (N) CT CABINET TO (N) LREC METER WITH FINAL TERMINATION AT (E) SWITCHGEAR. SEE(S) PER ONE LINE DIAGRAM.
- (N) DATA CONDUIT & CABLE FROM (N) TELEMETRY CABINET, (N) LREC METER, (N) PRIVATE METER TO EXISTING WREYWAY TO FACILITY MPOE. TERMINATE CABLES AT (E) DATA MPOE LOCATION. SEE(S) PER ELECTRICAL DATA DETAILS.
- (N) WATER PIPE FROM BUILDING DOMESTIC WATER SYSTEM TO (N) WDM. CONNECT TO NEAREST AVAILABLE LOCATION. SEE(S) PER INTERCONNECTION DIAGRAM.
- (N) DISCONNECT SWITCH & NEMA 3R ENCLOSURE. DISCONNECT SPECIFICATIONS PER ONE LINE DIAGRAM. MOUNT TO KINDORF STRUT PER MANUFACTURER SPECIFICATIONS. ENSURE LOCATION MEETS ALL REQUIRED N.E.C. CLEARANCES. PROVIDE MODEL NUMBER ON THE OUTSIDE OF THE FRONT PANEL.
- (N) BLOOMENERGY ES-5 ENERGY SERVER. CAST-IN-PLACE PAD AND MOUNTING SPECIFICATIONS PER DRAWINGS BY OTHERS. PAD PLACEMENT PER GRADING PLAN. PIPE & CONDUIT SUB-UP LOCATIONS PER PIPE PLAN & DETAILS AND ELECTRICAL CONDUIT DETAILS.
- (N) POWER DISTRIBUTION SECTION (PDS). CAST-IN-PLACE PAD AND MOUNTING SPECIFICATIONS PER GRADING PLAN. CONDUIT SUB-UP LOCATIONS PER ELECTRICAL CONDUIT PLAN.
- (N) TELEMETRY CABINET (TC) WITH FACTORY WIRING CLEAN ENERGY SERVER EMERGENCY POWER-OFF SWITCH (EPOS). CAST-IN-PLACE PAD AND MOUNTING SPECIFICATIONS PER GRADING PLAN. CONDUIT SUB-UP LOCATIONS PER ELECTRICAL CONDUIT DETAILS.
- (N) WATER DEIONIZATION MODULE (WDM). CAST-IN-PLACE PAD AND MOUNTING SPECIFICATIONS PER GRADING PLAN. PIPE & CONDUIT SUB-UP LOCATIONS PER PIPE PLAN & DETAILS & ELECTRICAL CONDUIT DETAILS.
- (N) WATER TAP.
- (N) COPPER GROUNDING RODS PER ONE LINE DIAGRAM.
- (N) REMOVABLE BOLLARD (TYP). TYPE, SEE & LOCATION PER IMPACT PROTECTION PLAN. ENSURE SLEEVE IS FLUSH WITH GRADE AND NO ANGLES OR HOOKS EXIST THAT IMPED FORKUP ACCESS.
- (N) PROVIDE SECURITY BOXES OF CONDUIT & WIRE AT ALL ELECTRICAL SUB-UP LOCATIONS.
- (N) CORE CONDUIT AND/OR PIPE THROUGH WALL. SCAN WALL PRIOR TO CORING. TRENCHING & ANCHORAGE DETAILS.
- (N) UTILITY APPROVED CT CABINET IN NEMA 3R ENCLOSURE. SPECIFICATIONS PER ONE LINE DIAGRAM. MOUNT TO KINDORF STRUT PER MANUFACTURER SPECIFICATIONS. ENSURE LOCATION MEETS ALL REQUIRED N.E.C. CLEARANCES. PROVIDE MODEL NUMBER ON THE OUTSIDE OF THE FRONT PANEL. COMPLETE SPECIFICATION PER ELECTRICAL SPECIFICATIONS.
- (N) UTILITY APPROVED LREC METER. SPECIFICATIONS PER ONE LINE DIAGRAM. MOUNT TO KINDORF STRUT PER MANUFACTURER SPECIFICATIONS. ENSURE LOCATION MEETS ALL REQUIRED N.E.C. CLEARANCES. PROVIDE MODEL NUMBER ON THE OUTSIDE OF THE FRONT PANEL. COMPLETE SPECIFICATION PER ELECTRICAL SPECIFICATIONS.
- (N) CONTRACTOR TO INSTALL (N) UTILITIES WITHOUT DAMAGING (E) UTILITIES. (N) UTILITIES ARE TO BE INSTALLED MAINTAINING MINIMUM CLEARANCES TO (E) UTILITIES AS IDENTIFIED IN TRENCHING DETAILS. HAND DIG ALL CONFLICT AREAS.
- (N) MPOE IS LOCATED ON SECOND FLOOR IN SERVER ROOM. CONTRACTOR TO CONNECT DATA CABBING TO EXISTING MPOE. CONTRACTOR SHALL UTILIZE EXISTING CABLE DROPS, OPENINGS, AND WREYWAY ROUTED FROM BELOW ROOM TO LOCATION AS INDICATED ON ELECTRICAL CONDUIT PLAN FOR TRANSITION TO CONDUIT.
- (N) HANDRAIL WITH REMOVABLE SECTION FOR FUEL CELL ACCESS.

CLIENT APPROVAL: _____ DATE _____

BLOOMENERGY APPROVAL: _____ DATE _____

Bloomenergy
1252 Officers Drive, Sunnyvale CA 94089
Tel: 408-543-1501
Fax: 408-543-1501
www.bloomenergy.com

PROPRIETARY & CONFIDENTIAL

IKEA

NEW CONSTRUCTION OF
300 KW CLEAN ENERGY SERVER
450 SARGENT DRIVE
NEW HAVEN, CT 06511

CORE STATES
58 MOUNTAIN ROAD
SUITE 301
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info@corestateseng.com

DOCUMENTS PREPARED BY CORE STATES GROUP, INCLUDING CORE STATES GROUP'S SPECIFICATIONS, SHALL BE USED ONLY FOR THE PROJECT AND SPECIFIC USE FOR WHICH THEY WERE PREPARED. ANY REUSE, MODIFICATION, OR ALTERATION OF THESE DOCUMENTS FOR ANY OTHER PROJECT, WITHOUT THE WRITTEN CONSENT OF CORE STATES GROUP, IS UNLAWFUL AND AT THE USER'S OWN RISK. CORE STATES GROUP SHALL NOT BE RESPONSIBLE FOR ANY LOSSES, DAMAGES, OR INJURIES RESULTING FROM THE USE OF THESE DOCUMENTS.

REV DATE DESCRIPTION

PROJECT INFORMATION

JOB # BEC-202401
DATE: 04-13-16
DRAWN BY: MP
CHECKED BY: MDS

MODEL

(1) ES-5 - 250 KW

SHEET TITLE

SITE PLAN

SHEET NUMBER

2.0

Exhibit 3



STATE OF CONNECTICUT

DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
PUBLIC UTILITIES REGULATORY AUTHORITY
TEN FRANKLIN SQUARE
NEW BRITAIN, CT 06051

**DOCKET NO. 12-02-09 PETITION OF BLOOM ENERGY CORPORATION FOR A
DECLARATORY RULING THAT ITS SOLID OXIDE FUEL
CELL ENERGY SERVER WILL QUALIFY AS A CLASS I
RENEWABLE ENERGY SOURCE**

September 12, 2012

By the following Directors:

Arthur H. House
John W. Betkoski, III

DECISION

I. INTRODUCTION

By Petition dated February 14, 2012, pursuant to Section 4-176 in the General Statutes of Connecticut (Conn. Gen. Stat.) and Section 16-1-113 in the Regulations of Connecticut State Agencies, Bloom Energy Corporation requests that the Public Utilities Regulatory Authority (Authority) issue a declaratory ruling that its solid oxide fuel cell energy server qualifies as a Class I renewable energy source.

II. PETITIONER'S EVIDENCE

Bloom Energy Corporation (Bloom) has commercialized a scalable, modular fuel cell using Bloom's patented solid oxide fuel cell (SOFC) technology. A fuel cell is a device that uses a fuel and oxygen to create electricity by an electrochemical process. A single fuel cell consists of an electrolyte and two catalyst-coated electrodes (an anode cathode). Fuel cells are generally categorized by the type of electrolyte used. Petition, pp. 2 and 3.

Each Bloom Energy Server consists of thousands of Bloom's patented SOFCs. Each fuel cell is a flat, solid ceramic square capable of producing at least 25 watts. In an energy server, Bloom "sandwiches" the SOFCs between metal interconnect plates into a fuel cell "stack." Bloom aggregates multiple fuel cell stacks together into a "power module," and then multiple power modules, along with a common fuel input and electrical output, are assembled as a complete energy server fuel cell. Id., p. 3.

The Bloom Energy Server converts the chemical energy contained in fuel, such as natural gas, into electricity at an efficiency of approximately 50% - 60% (lower heating value net AC) without any combustion or multi-stage conversion loss. Fuel entering the energy server is processed using a proprietary catalytic method to yield a reformat gas stream, and the gaseous product and preheated air are introduced into the fuel cell stacks. Within the stacks, ambient oxygen reacts with the fuel to produce direct current (DC) electricity. The DC power produced by the energy server system is converted into 480-volt AC power using an inverter, and delivered to the host facility's electrical distribution system. Id.

SOFCs operate at very high temperatures, obviating the need for expensive metal catalysts. With low cost ceramic materials, and extremely high electrical efficiencies, SOFCs can deliver attractive economies without relying on combined heat and power. Id.

Bloom Energy Servers are a fraction of the size of a traditional base load power source, with each server occupying a space similar to that of a parking space. This small, low-impact, modular form of base load power does not pose the environmental challenges associated with a traditional base load power plant, significantly reducing environmental impacts. Moreover, Bloom's innovative design requires only an initial input of 120 gallons of water per 100 kW, after which no additional water is consumed during normal operation. Id., pp. 3 and 4.

Bloom Energy Servers deliver significant environmental benefits over conventional base load technologies. In addition to significant CO₂ reductions due to its high efficiency, the energy server emits virtually no NO_x, SO_x, or other smog forming particulates since the conversion of gas to electricity in a Bloom Energy Server is done through an electrochemical reaction rather than combustion. Id., p. 4.

III. AUTHORITY ANALYSIS

Conn. Gen. Stat. §16-1(a)(26) defines a Class I renewable energy source as:

(A) energy derived from solar power; wind power; a fuel cell; methane gas from landfills; ocean thermal power; wave or tidal power; low emission advanced renewable energy conversion technologies; a run-of-the-river hydropower facility provided such facility has a generating capacity of not more than five megawatts, does not cause an appreciable change in the river flow, and began operation after the effective date of this section; or a biomass facility, including, but not limited to, a biomass gasification plant that utilizes land clearing debris, tree stumps or other biomass that regenerates or the use of which will not result in a depletion of resources, provided such biomass is cultivated and harvested in a sustainable manner and the average emission rate for such facility is equal to or less than .075 pounds of nitrogen oxides per million BTU of heat input for the previous calendar quarter, except that energy derived from a biomass facility with a capacity of less than five hundred kilowatts that began construction before July 1, 2003, may be considered a Class I renewable energy source, provided such biomass is cultivated and harvested in a sustainable manner; or (B) any electrical generation, including distributed generation, generated from a Class I renewable energy source.

Based on Bloom's assertions, the Authority finds that its Bloom Energy Server qualifies as a Class I renewable energy source "fuel cell" as defined in Conn. Gen. Stat. §16-1(a)(26)(A).

The Authority has created an electronic application process for generation owners to apply for a Connecticut Renewable Portfolio Standards registration. The application is available on the Authority's website at the web address <http://www.ct.gov/pura>. The application should be submitted electronically along with a single hard-copy filing. While the Authority concludes in this Decision that the Bloom Energy Server would qualify as a Class I renewable energy source pursuant to Conn. Gen. Stat. §16-1(a)(26), Bloom must still apply for registration of the aforementioned system once the facility becomes operational and is registered in the New England Generation Information System.

IV. CONCLUSION

Based upon the project as described herein, the Authority finds that, as proposed, the Bloom Energy Server would qualify as a Class I renewable energy source. However, since the energy server is not yet operational, it should apply for Class I registration once it begins operations.

The Connecticut Department of Energy and Environmental Protection is an Affirmative Action/Equal Opportunity Employer that is committed to requirements of the Americans with Disabilities Act. Any person with a disability who may need information in an alternative format may contact the agency's ADA Coordinator at 860-424-3194, or at deep.hrmed@ct.gov. Any person with limited proficiency in English, who may need information in another language, may contact the agency's Title VI Coordinator at 860-424-3035, or at deep.aaoffice@ct.gov. Any person with a hearing impairment may call the State of Connecticut relay number – 711. Discrimination complaints may be filed with DEEP's Title VI Coordinator. Requests for accommodations must be made at least two weeks prior to any agency hearing, program or event.

**DOCKET NO. 12-02-09 PETITION OF BLOOM ENERGY CORPORATION FOR A
DECLARATORY RULING THAT ITS SOLID OXIDE FUEL
CELL ENERGY SERVER WILL QUALIFY AS A CLASS I
RENEWABLE ENERGY SOURCE**

This Decision is adopted by the following Directors:

Arthur H. House

John W. Betkoski, III

CERTIFICATE OF SERVICE

The foregoing is a true and correct copy of the Decision issued by the Public Utilities Regulatory Authority, State of Connecticut, and was forwarded by Certified Mail to all parties of record in this proceeding on the date indicated.



Kimberley J. Santopietro
Executive Secretary
Department of Energy and Environmental Protection
Public Utilities Regulatory Authority

September 12, 2012

Date

Exhibit 4

April 20, 2016

Via certified mail

City Plan Department (5th Floor)
165 Church Street
New Haven, CT 06510

Attn: Anne Hartjen

RE: Bloom Energy Clean Energy Server Installation
Ikea – 450 Sargent Drive, New Haven, CT

Mrs. Hartjen,

On behalf of Bloom Energy we would like to provide you with information pertaining to the proposed clean energy server installation project located at the Ikea Store, 450 Sargent Drive.

This project proposes to install one (1) new ES-5 Bloom Energy Servers; a new class of distributed power generator which produces clean, reliable and affordable electricity at the customer site. Bloom Energy Server contains solid oxide fuel cells which provide 250 kW of power, utilizing a non-combustive chemical process. The Clean Energy Server is mounted onto a 29'3" x 4'3" precast concrete pad which will be on an elevated platform one (1) foot above the flood elevation. Placement of the Clean Energy Server equipment is proposed to be installed at the rear of the building where existing diesel generator and transformers are currently located.

The ES-5 equipment has been designed in compliance with Underwriters Laboratories (UL) in addition to various safety standards and requirements. There are no harmful off-gases or byproducts that will be produced by this equipment.

Please note that the energy server is monitored 24 hours a day, 7 days a week by Bloom Energy's communications network in Sunnyvale, CA. In the unlikely event the system will require attention, the system can be remotely shut off by Bloom. Additionally, the equipment will have several means to shut down the energy server locally.

We are submitting to the Connecticut Siting Council in the near future and want to give you an opportunity to review the proposed site plans to your office. We would be happy to discuss any comments you may have either by phone or in person. If you have any questions or need further information, please feel free to call at (908) 462-9939.

Thank you,
Core States Group


Michael D. Sousa
msousa@core-eng.com

Exhibit 5



Energy Server 5

Clean, Reliable, Affordable Energy



CLEAN, RELIABLE POWER ON DEMAND

The Energy Server 5 delivers clean power that reduces emissions and energy costs. The modular architecture enables the installation to be tailored to the actual electricity demand, with a flexibility to add servers as the load increases. The Energy Server 5 actively communicates with Bloom Energy's network operations centers so system performance can be monitored 24 hours per day, 365 days per year.

INNOVATIVE TECHNOLOGY

Utilizing solid oxide fuel cell (SOFC) technology first developed for NASA's Mars program, the Energy Server 5 produces clean power at unprecedented efficiencies, meaning it consumes less fuel and produces less CO₂ than competing technologies. Additionally, no water is needed under normal operating conditions.

ALL-ELECTRIC POWER

The Energy Server 5, which operates at a very high electrical efficiency, eliminates the need for complicated and costly CHP systems. Combining the standard electrical and fuel connections along with a small footprint and sleek design, the Energy Server 5 is the most deployable fuel cell solution on the market.

CONTROLLED AND PREDICTABLE COST

By providing efficient on-site power generation, the economic and environmental benefits are central to the Energy Server 5 value proposition. Bloom Energy customers can lock in their long term energy costs and mitigate the risk of electricity rate increases. The Energy Server 5 has been designed in compliance with a variety of safety standards and is backed by a comprehensive warranty.

About Bloom Energy

Bloom Energy is making clean, reliable energy affordable. Our unique on-site power generation systems utilize an innovative fuel cell technology with roots in NASA's Mars program. By leveraging breakthrough advances in materials science, Bloom Energy systems are among the most efficient energy generators, providing for significantly reduced operating costs and dramatically lower greenhouse gas emissions. Bloom Energy Servers are currently producing power for many Fortune 500 companies including Apple, Google, NSA, Walmart, AT&T, eBay, Staples, as well as notable non-profit organizations such as Caltech and Kaiser Permanente.

Headquarters:

Sunnyvale, California

For More Information:

www.bloomenergy.com

Energy Server 5

Technical Highlights (ES5-AA1AA0)

Outputs

Nameplate power output (net AC)	262.5 kW
Base load output (net AC)	250 kW
Electrical connection	480 V, 3-phase, 60 Hz

Inputs

Fuels	Natural gas, directed biogas
Input fuel pressure	10-18 psig (15 psig nominal)
Water	None during normal operation

Efficiency

Cumulative electrical efficiency (LHV net AC)*	65-53%
Heat rate (HHV)	5,811-7,127 Btu/kWh

Emissions

NO _x	< 0.01 lbs/MWh
SO _x	Negligible
CO	<0.05 lbs/MWh
VOCs	< 0.02 lbs/MWh
CO ₂ @ stated efficiency	679-833 lbs/MWh on natural gas; carbon neutral on directed biogas

Physical Attributes and Environment

Weight	14.3 tons
Dimensions (variable layouts)	14'9" x 8'9" x 7' or 29'6" x 4'5" x 7'5"
Temperature range	-20° to 45° C
Humidity	0% - 100%
Seismic vibration	IBC site class D
Location	Outdoor
Noise	< 70 dBA @ 6 feet

Codes and Standards

Complies with Rule 21 interconnection and IEEE1547 standards
Exempt from CA Air District permitting; meets stringent CARB 2007 emissions standards
Product Listed by Underwriters Laboratories Inc. (UL) to ANSI/CSA FC 1-2014

Additional Notes

Access to a secure website to monitor system performance & environmental benefits
Remotely managed and monitored by Bloom Energy
Capable of emergency stop based on input from the site

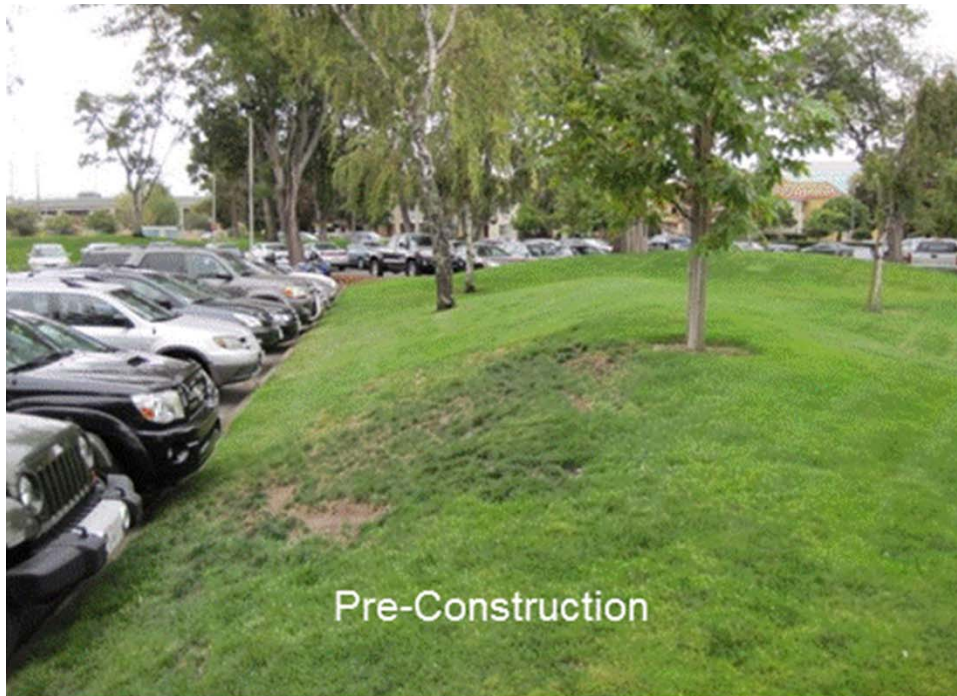
* 65% LHV efficiency verified by ASME PTC 50 Fuel Cell Power Systems Performance Test



Bloom Energy Corporation
1299 Orleans Drive
Sunnyvale CA 94089
T 408 543 1500
www.bloomenergy.com

Bloom Energy Server





Pre-Construction



Install Preparations – Trenching & Underground Utility



Set Pads



Site Completion

Bloom Energy Server Installation



Representative Installations



Exhibit 6

April 20, 2016

VIA FIRST CLASS MAIL

RE: Application for Core States Group, as Agent for Ikea, for the construction of a 250 kW Fuel Cell Customer-Side Distributed Resource at 450 Sargent Drive – New Haven, CT 06511.

Dear Ladies and Gentlemen:

Pursuant to Section 16-50j-40 of the Connecticut Siting Council's (the "Council") regulations, we are notifying you that Ikea intends to file on or shortly after April 20, 2016, a petition for declaratory ruling with the Council. The petition will request the Council's approval of the location and construction of an approximately 250 kilowatt Bloom Energy Corporation fuel cell facility and associated equipment (the "Facility"), located at the site of the Ikea Store at 450 Sargent Drive – New Haven, Connecticut (the "Site"). Electricity generated by the Facility will be consumed primarily at the Site, and any excess electricity will be exported to the electric grid. The Facility will be fueled by natural gas.

The facility will be located on an elevated platform within the sidewalk along a parking area along the south-western face of Ikea building. The fuel cell is approximately 30'-4" long, 4'-5" wide, and 6'-10" high.

If you have any questions regarding the proposed Facility, please contact the undersigned or the Council.

Respectfully,



Michael D. Sousa
msousa@core-eng.com
(908) 462-9939

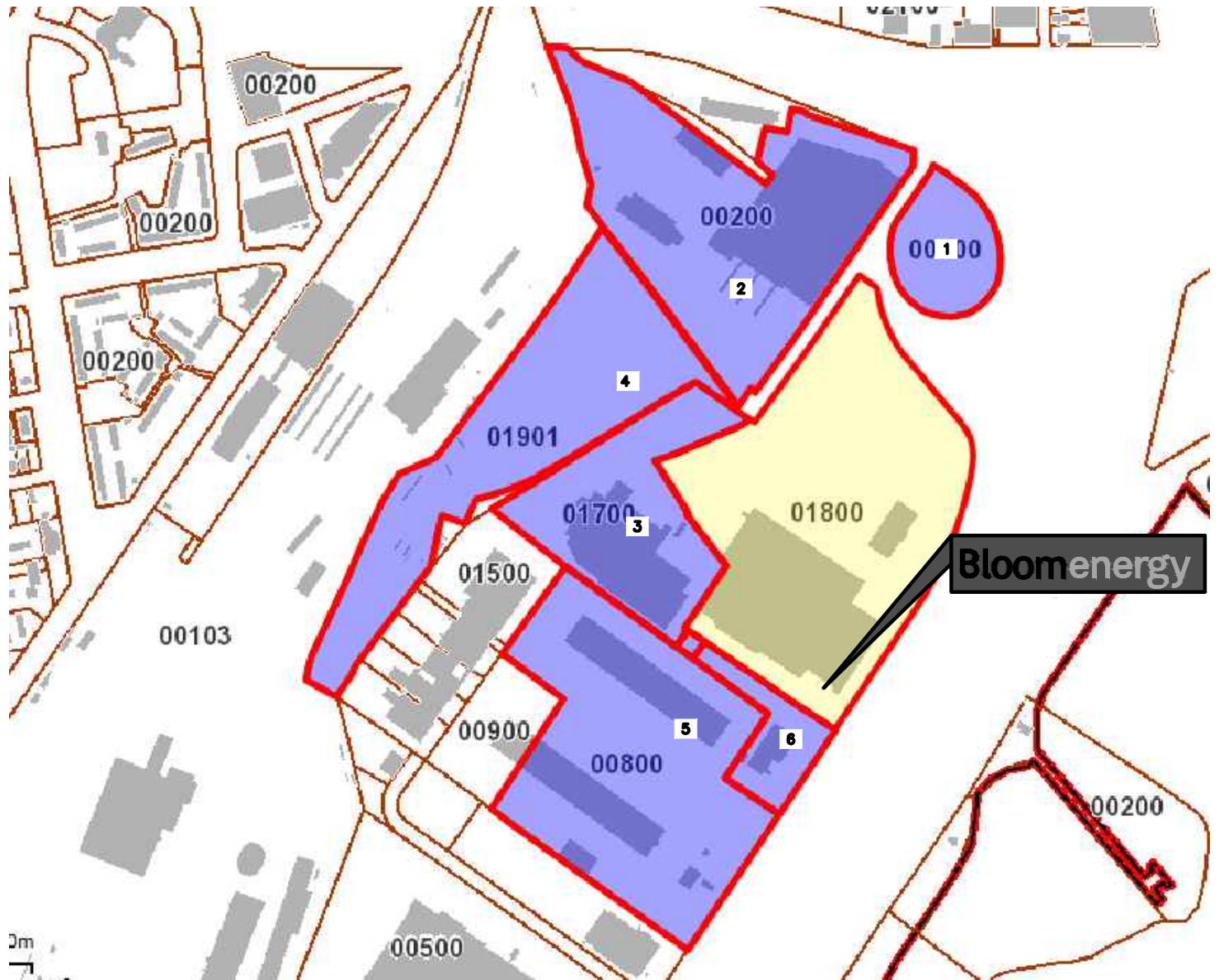
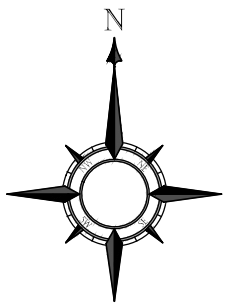
Municipal Official/Agency	Name/Address
New Haven Mayor	Toni Harp Town Hall, Mayor 165 Church Street New Haven, CT 06510
New Haven Planning & Zoning Department	Anne Hartjen City Plan Department 165 Church Street, 5th Floor New Haven, CT 06510
Conneticut U.S. Senator	Richard Blumental 702 Hart Senate Office Building Washington, D.C. 20510
Conneticut U.S. Senator	Chris Murphy B40A Dirksen Senate Office Building Washington, D.C. 20510
Conneticut U.S. Representative	Rosa DeLauro Congressman District 3 2413 Rayburn House Office Building Washington, D.C. 20515
Conneticut State Senator	Gary Holder-Winfield Legislative Office Building Room 2400 Hartford, CT 06106
Conneticut State Senator	Martin Looney Legislative Office Building Room 3300 Hartford, CT 06106

New Haven State Representative	Patricia Dillon 92nd District Legislative Office Building Room 4019 Hartford, CT 06106
New Haven State Representative	Toni Edmonds Walker 93rd District Legislative Office Building Room 2702 Hartford, CT 06106
New Haven State Representative	Robyn Porter 94th District Legislative Office Building Room 4006 Hartford, CT 06106
New Haven State Representative	Ronald Lemar 96th District Legislative Office Building Room 4041 Hartford, CT 06106
New Haven State Representative	Robert W. Megna 97th District Legislative Office Building Room 2802 Hartford, CT 06106
Connecticut Attorney General	George Jepsen Attorney General 55 Elm Street Hartford, CT 06106
State Development of Energy and Environmental Protection	Rob Klee Commissioner 79 Elm Street Hartford, CT 06106

State Department of Public Utility Regulatory Authority	Arthur House Chairman 10 Franklin Square New Britain, CT 061051
State Department of Public Health	Raul Pino M.D., M.P.H. Commissioner 410 Capital Avenue PO Box 340308 Hartford, CT 06134
State Council on Environmental Quality	Susan D. Merrow Chair 79 Elm Street Hartford, CT 06106
State Department of Agriculture	Steven K. Reviczky Commissioner 165 Capital Avenue Hartford, CT 06106
Office of Policy & Management	Benjamin Barnes Secretary of OPM 450 Capital Avenue Hartford, CT 06106
State Department of Economic & Community Development	Catherine Smith Commissioner 505 Hudson Street Hartford, CT 06106
State Department of Transportation	James P. Redeker Commissioner 2800 Berlin Turnpike Newington, CT 06111

Abutter Property		Abutter Name/Mailing Address
1	165 CAPITOL AVE HARTFORD, CT 06106	STATE OF CONNECTICUT 165 CAPITOL AV HARTFORD, CT 06106
2	50 BREWERY ST NEW HAVEN, CT 06511	UNITED STATES POSTAL SERVICE 50 BREWERY ST NEW HAVEN, CT 06511
3	2800 BERLIN TPKE PO BOX 317546 NEWINGTON, CT 06131	STATE OF CONNECTICUT C/O DEPT OF TRANSPORTATION 2800 BERLIN TPKE PO BOX 317546 NEWINGTON, CT 06131
4	165 CAPITOL AV HARTFORD, CT 06106	STATE OF CONNECTICUT 165 CAPITOL AV HARTFORD, CT 06106
5	P. O. BOX 8926 NEW HAVEN, CT 06532	NEW HAVEN FOOD TERMINAL INC P. O. BOX 8926 NEW HAVEN, CT 06532
6	909 HIDDEN RIDGE SUITE 600 PROPERTY TAX DEPTIRVING, TX 75038-3822	NEW HAVEN FOOD TERMINAL INC 909 HIDDEN RIDGE SUITE 600 PROPERTY TAX DEPTIRVING, TX 75038-3822

Exhibit 7



Job#: BEC-20260
Scale: N.T.S.
Date: 04/20/2016
Drawn By: MDS

CORE STATES

GROUP
58 Mount Bethel Boulevard, Suite 301,
Warren, NJ 07059
Tel: (908) 462-9700 Fax: (908) 462-9909
amueller@core-eng.com

Bloomenergy™

1252 Orleans Drive, Sunnyvale CA, 94089
Tel: 408 543 1500 Fax: 408 543 1501

450 SARGENT DRIVE
NEW HAVEN, CT 06511

EXHIBIT 7 - ABUTTERS MAP
NEW HAVEN GIS